AMENDMENTS TO THE CLAIMS:

Please replace the claims with the following rewritten listing.

1. (Currently Amended) Method for reconstructing multidimensional objects from one- or two-dimensional image data, comprising:

recording one-or two-dimensional partial image areas of an object; and

using absolute positions of individual partial image areas in space and/or relative positions of the individual partial image areas to each other along with one- or two-dimensional image information of the individual partial image areas for generating one- or two-dimensional image data

wherein a first group of space elements is generated in a multidimensional voxel space from first space elements which contain multidimensional image information and touch or intersect planes or lines of the partial image areas by the one- or two-dimensional image data;

wherein a second group of space elements is generated in the multidimensional voxel space from second space elements by an information transformation from the multidimensional image information of the first group of space elements; ~~and~~

wherein said information transformation includes at least one search beam running from each first space element along a pre-determinable multidimensional direction vector, thereby defining those second space elements determined by the multidimensional image information of that first space element which forms a starting point of the search beam; and

wherein the search beam has a chronological and/or spatial starting point on the plane or line of the partial image area used to determine the multidimensional image information of the first space element, and the search beam has a maximum spatial and/or chronological length along the pre-determinable multidimensional direction vector;

wherein the second space elements are determined in a first step by the multidimensional image information of that first space element which forms the starting point of the search beam, and the second space elements are weighted in further steps by multidimensional image information of further first space elements which form starting points of search beams which also penetrate the second space elements, wherein the

weights orientate themselves at multidimensional distances of each second space element to the respective starting points.

2. (Previously Presented) Method according to claim 1, wherein the multidimensional image information of each first space element is determined by one- or two-dimensional image information which exists at a particular interface/point of contact of a respective first space element with a respective plane or line of the partial image area.

3. (Previously Presented) Method according to claim 1, wherein a spatial and/or chronological distance from each second space element to the next first space element of the first group of space elements is determined, and the multidimensional image information of each second space element is determined by the multidimensional image information of a spatially and/or chronologically nearest first space element.

4. (Previously Presented) Method according to claim 3, wherein the multidimensional image information of each second space element is not determined when the spatial and/or chronological distance to the nearest first space element is larger than a pre-determinable maximum spatial and/or chronological distance.

5. (Previously Presented) Method according to claim 4, wherein the multidimensional image information of the spatially and/or chronologically nearest first space element is used as multidimensional image information of each second space element lying within a maximum spatial and/or chronological distance to a first space element.

6. (Previously Presented) Method according to claim 3, wherein the spatial and/or chronological distance and a reference number for the plane or line of the partial image area used to determine the multidimensional image information of the nearest first space element, is stored as multidimensional image information of each second space element.

7. (Previously Presented) Method according to claim 1, wherein the spatial and/or chronological distances from each second space element to two or more first space

elements of the first group of space elements are determined, and the multidimensional image information of each second space element is determined by the multidimensional image information of a pre-determinable number of spatially and/or chronologically nearest first space elements.

8. (Previously Presented) Method according to claim 7, wherein the multidimensional image information of each second space element is determined by the multidimensional image information, weighted on the different spatial and/or chronological distances, of a pre-determinable number of first space elements.

9-10. (Cancelled)

11. (Previously Presented) Method according to claim 1, wherein the second space elements are determined by the multidimensional image information of another first space element of the first group of space elements, which constitutes a target point which is hit by the search beam.

12. (Previously Presented) Method according to claim 11, wherein the second space elements are determined by weighted multidimensional image information of the starting point and the target point, wherein the weights orientate themselves at multidimensional distances of each second space element, lying on the search beam, to the starting or target point.

13. (Cancelled)

14. (Previously Presented) Method according to claim 1, wherein the object is reconstructed and represented multidimensionally by the multidimensional voxel space comprising the first and second group of space elements and/or wherein parts of the reconstructed object are represented by variable sectional planes.

15. (Previously Presented) Method according to claim 14, wherein the reconstructed object or parts thereof are represented or equipped with pre-determinable characteristics like color or resistance.

16. (Previously Presented) Method according to claim 14, wherein certain parts of the multidimensional voxel space are marked and sampled for representation on one side of an intersectional plane in order to visualize certain parts of the reconstructed object.

17. (Previously Presented) Method according to claim 14, wherein the multidimensional voxel space is sampled by an intersectional plane into at least two halves to visualize certain parts of the reconstructed object, and wherein the intersectional plane and/or the at least two halves are pivotable and/or rotatable and/or displaceable in different multidimensional directions.

18. (Currently Amended) Device for reconstructing multidimensional objects from one- or two-dimensional image data, on basis of recordings of one- or two-dimensional partial image areas of an object, comprising:

first storage means for storing absolute spatial and/or chronological positions of the individual partial image areas and/or relative spatial and/or chronological positions of the individual partial image areas to each other along with one- or two-dimensional image information of the individual partial image areas for generating one- or two-dimensional image data, ;

second storage means for storing a first group of space elements which can be generated in a multidimensional voxel space from first multidimensional image information containing first space elements touching or intersecting planes or lines of partial image areas by the one- or two-dimensional image data; ~~and~~

third storage means for storing a second group of space elements generated in the multidimensional voxel space from second space elements by an information transformation from the multidimensional image information of the first group of space elements;

a search beam that has a chronological and/or spatial starting point on the planes or lines of the partial image area used to determine the multidimensional image information of the first space element, and the search beam has a maximum spatial and/or chronological length along the pre-determinable multidimensional direction vector;

wherein the second space elements are determined in a first step by the multidimensional image information of that first space element which forms the starting point of the search beam, and the second space elements are weighted in further steps by multidimensional image information of further first space elements which form starting points of search beams which also penetrate the second space elements, wherein the weights orientate themselves at multidimensional distances of each second space element to the respective starting points.

19. (Previously Presented) Device according to claim 18, wherein the object is reconstructed and represented in a display by spanning the multidimensional voxel space by the first and second group of space elements.

20. (Previously Presented) Device according to claim 18, wherein calculation means carry out the information transformation from data of the first and second storage means and store the results in the third storage means.

21. (Previously Presented) Method according to claim 1 further comprising a multidimensional reconstruction and representation of an organ comprising a heart of a creature, considering motion of a heart.

22. (Previously Presented) Method according to claim 1, further comprising performing at least one of transthoracal (TTE), transoesophagic (TEE), and intravascular (IVUS) echocardiography and/or intraductal (IDUS) sonography.

23. (Previously Presented) Device according to claim 18, configured for a multidimensional reconstruction and representation of an organ comprising a heart of a creature, considering the motion of the heart.

24. (Previously Presented) A device according to claim 18, configured for at least one of transthoracal (TTE), transoesophagic (TEE), and intravascular (IVUS) echocardiography and/or intraductal (IDUS) sonography.

25. (New) Method for reconstructing multidimensional objects from one- or two-dimensional image data, comprising:

recording one-or two-dimensional partial image areas of an object; and

using absolute positions of individual partial image areas in space and/or relative positions of the individual partial image areas to each other along with one- or two-dimensional image information of the individual partial image areas for generating one- or two-dimensional image data

wherein a first group of space elements is generated in a multidimensional voxel space from first space elements which contain multidimensional image information and touch or intersect planes or lines of the partial image areas by the one- or two-dimensional image data;

wherein a second group of space elements is generated in the multidimensional voxel space from second space elements by an information transformation from the multidimensional image information of the first group of space elements;

wherein the spatial and/or chronological distance from each second space element to the next first space element of the first group of space elements is determined;

wherein the multidimensional image information of each second space element is determined by means of the multidimensional image information of the spatially and/or chronologically nearest first space element; and

wherein the spatial and/or chronological distance and a reference number for the plane or line of the partial image area, which was used to determine the multidimensional image information of the nearest first space element, is also stored as multidimensional image information of each second space element.